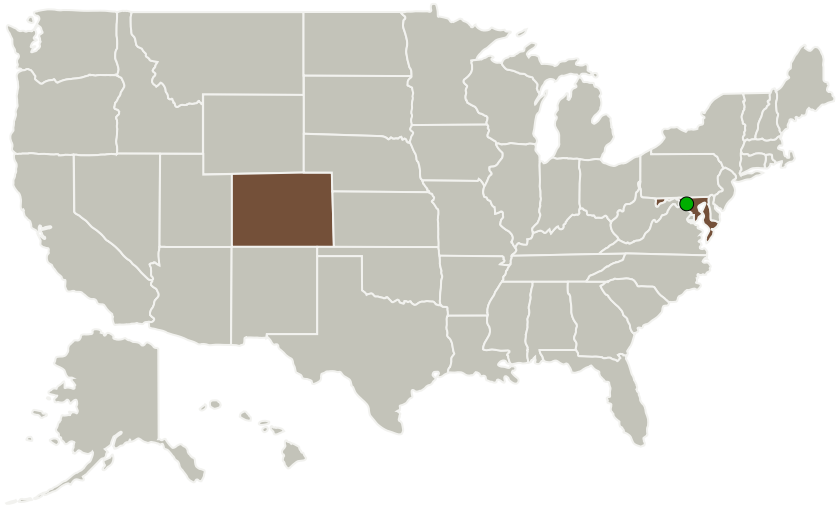
A Continuously Updated, Global Land Classification Map, Phase I

Completed Technology Project (2014 - 2014)

Project Introduction

We propose to demonstrate a fully automatic capability for generating a global, high resolution (30 m) land classification map, with continuous updates from satellite imagery and crowdsourced ground truth, and an annual publication cycle. The resulting map will be fully extensible, supporting many layers including Anderson type land cover categories, specific crop types in agricultural areas, and even continuous variables such as crop yield estimates. Our methodology involves fusing imagery with existing raster and vector ground truth data sets, applying a novel classification technique to enable vastly improved spatial/temporal model portability, and continuous updating as additional imagery and crowdsourced ground truth data becomes available. By employing a systematic crowdsourcing strategy that is responsive to local and regional market incentives, the map's accuracy will improve most over time in those geographic regions where higher accuracy is most needed. The resulting map product will find immediate use for a multitude of applications in agriculture, commodities trading, ecological forecasting, wildlife conservation and climate change studies. We foresee monetizing the continuous production effort by obtaining stakeholder funding to make a standard product freely available to the global public, but we also intend to develop higher precision, commercial products for lucrative applications such as precision agriculture in targeted locations worldwide.

Primary U.S. Work Locations and Key Partners



A Continuously Updated, Global Land Classification Map Project Image

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Organizations Performing Work	Role	Type	Location
GeoVisual Technologies Inc.	Lead Organization	Industry	Boulder, Colorado
Goddard Space Flight Center(GSFC)	Supporting Organization	NASA Center	Greenbelt, Maryland

Primary U.S. Work Locations	
Colorado	Maryland

Project Transitions

June 2014: Project Start

December 2014: Closed out

Closeout Documentation:

- Final Summary Chart*(https://techport.nasa.gov/file/137477)*

Images

Project Image
A Continuously Updated, Global Land Classification Map Project Image
(https://techport.nasa.gov/image/133191)

Organizational Responsibility

Responsible Mission Directorate:
Space Technology Mission Directorate (STMD)

Lead Organization:
GeoVisual Technologies Inc.

Responsible Program:
Small Business Innovation Research/Small Business Tech Transfer

Project Management

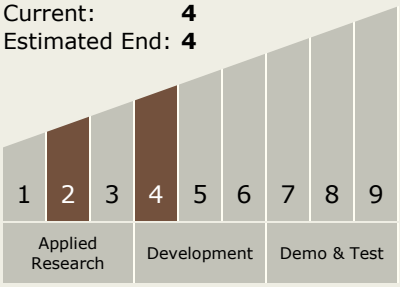
Program Director:
Jason L Kessler

Program Manager:
Carlos Torrez

Principal Investigator:
Jeffrey Orrey

Technology Maturity (TRL)

Start: **2**
Current: **4**
Estimated End: **4**



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Technology Areas

Primary:

- TX11 Software, Modeling, Simulation, and Information Processing
  - TX11.2 Modeling
    - TX11.2.4 Science Modeling

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System